

To the WRC-07 Advisory Committee:

Attached please find two documents from IWG-3 related to Agenda Item 1.9 “to review the technical, operational and regulatory provisions applicable to the use of the band 2 500-2 690 MHz by space services in order to facilitate sharing with current and future terrestrial services without placing undue constraint on the services to which the band is allocated” of the 2007 to the World Radiocommunication Conference (WRC-07).

After considerable debate, IWG-3 drafted IWG-3 Proposal for Agenda Item 1.9 presented in Document WAC/102A. Over the past several months, this document was reviewed by the entire IWG-3 and modified to include the concerns of some MSS companies, including New ICO, Globalstar and MSV. The majority of IWG-3 members supported the resulting proposal. However, IWG-3 was unable to reach full consensus as a minority of members from the satellite community continued to object to the proposal.

The dissenting proposal from the satellite community is contained in Proposal Document WAC/102B. This document was not extensively reviewed by the IWG and only represents the views of those parties dissenting.

IWG-3 forwards the majority proposal and dissenting proposal to the WRC-07 Advisory Committee for its consideration.

Sincerely,

Cecily A. Cohen  
Chair, IWG-3

## IWG-3/WRC-07/Proposal/Doc.5r6

*United States of America****DRAFT PROPOSAL FOR THE WORK OF THE CONFERENCE***

**WRC-07 Agenda Item 1.9:** to review the technical, operational and regulatory provisions applicable to the use of the band 2 500-2 690 MHz by space services in order to facilitate sharing with current and future terrestrial services without placing undue constraint on the services to which the band is allocated;

**Background Information:** The band 2 500-2 690 MHz is allocated for sharing by both terrestrial and satellite services. The terrestrial services include the Mobile Services and the Fixed Services (including IMT-2000). Both the terrestrial Mobile and Fixed Services have been rapidly evolving to encompass high-speed mobile Internet services requiring sensitive receiving equipment, which are highly susceptible to interference.

Portions of the 2500-2690 MHz band are also allocated to the satellite services, which include MSS, BSS (including GSO and non-GSO), and FSS. At WRC-03 the issue of sharing between terrestrial services and NGSO BSS (Sound) in certain Region 3 countries was resolved with the revision of pfd limits for NGSO BSS (Sound) per Resolution 539. GSO BSS (Sound) limits within these countries were also tightened for systems for which complete Appendix 4 coordination information has been received after 1 June 2005. Other than for these Region 3 countries the BSS limits remained the same as given in Table 21-4.

In general, co-frequency sharing between the mobile-satellite service (MSS) and terrestrial services has been found to be difficult in the ITU-R studies. The sharing between the terrestrial services and the MSS poses risks of harmful interference to both systems. In addition, sharing would require large separation distances between terrestrial stations and MSS earth stations in order to avoid harmful interference to both stations. ITU-R Report M.2041 studied the feasibility of sharing between MSS and MS for IMT-2000 and highlighted the sharing difficulties between these two services on a co-frequency, co-coverage basis. Per Report M.2041, "When considering the sharing of the same frequency band between the terrestrial component of IMT-2000 and the MSS, the detailed analysis (see Annex 2) shows that such sharing is not feasible over the same geographical area. Consequently, Radiocommunication Study Group 8 came to the conclusion that co-frequency sharing is not feasible for networks operating in the same geographical area." Report M.2041 was approved in SG8 with support from the USA.

Within Region 2 any satellite service launched will naturally overlap many other Region 2 countries and may have the effect of interfering with existing and planned terrestrial services within that band. Administrations in Region 2 have indicated no plans to implement MSS systems in the 2500-2690 MHz band. A number of Administrations in Region 2 have authorized terrestrial Mobile and Fixed services and several other Region 2 Administrations have definite plans to

introduce new terrestrial Mobile and Fixed services in the 2500-2690 MHz band. (See WP-8F questionnaire to administrations and summary in document 8F/TEMP/276).

In addition to the allocation of the 2500-2520 MHz and 2670-2690 MHz band for MSS within Region 2, the bands 137-137.025 MHz, 148-150.05 MHz, 399.9-401 MHz, 406-406.1 MHz, 455-456 MHz, 459-460 MHz, 1518-1559 MHz, 1610-1660.5 MHz, 1668.4-1675 MHz, 1930-1970 MHz, 1980-2025 MHz, 2120-2200 MHz, 2483.5-2500 MHz, 14-14.5 GHz, 19.7-21.2 GHz, 29.5-31 GHz, 39.5-41 GHz, among others, are also allocated for MSS within Region 2.

Considering that:

- (1) Administrations in Region 2 have indicated no plans to implement MSS services in the 2500-2690 MHz band,
- (2) Administrations in Region 2 have implemented or plan to implement terrestrial Mobile and Fixed services in the 2500-2690 MHz band,
- (3) Co-frequency sharing of the 2500-2690 MHz band between MSS and terrestrial services threatens to cause interference to terrestrial Mobile services systems,
- (4) That there is other spectrum allocated for MSS within Region 2, (I move to strike *considering*

the MSS allocation in Region 2 should be suppressed

**Proposal**

USA/ /1 MOD

**ARTICLE 5****Frequency allocations**

Section IV – Table of Frequency Allocations

**2 170-2 520 MHz**

<b>Allocation to services</b>		
<b>Region 1</b>	<b>Region 2</b>	<b>Region 3</b>
<b>2 170-2 200</b>	FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) 5.351A 5.388 5.389A 5.389F 5.392A	
<b>2 200-2 290</b>	SPACE OPERATION (space-to-Earth) (space-to-space) EARTH EXPLORATION-SATELLITE (space-to-Earth) (space-to-space) FIXED MOBILE 5.391 SPACE RESEARCH (space-to-Earth) (space-to-space) 5.392	
<b>2 290-2 300</b>	FIXED MOBILE except aeronautical mobile SPACE RESEARCH (deep space) (space-to-Earth)	
<b>2 300-2 450</b> FIXED MOBILE Amateur Radiolocation 5.150 5.282 5.395	<b>2 300-2 450</b> FIXED MOBILE RADIOLOCATION Amateur 5.150 5.282 5.393 5.394 5.396	
<b>2 450-2 483.5</b> FIXED MOBILE Radiolocation 5.150 5.397	<b>2 450-2 483.5</b> FIXED MOBILE RADIOLOCATION 5.150 5.394	

<p><b>2 483.5-2 500</b> FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) 5.351A Radiolocation</p> <p>5.150 5.371 5.397 5.398 5.399 5.400 5.402</p>	<p><b>2 483.5-2 500</b> FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) 5.351A RADIOLOCATION RADIODETERMINATION- SATELLITE (space-to-Earth) 5.398</p> <p>5.150 5.402</p>	<p><b>2 483.5-2 500</b> FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) 5.351A RADIOLOCATION Radiodetermination-satellite (space-to-Earth) 5.398</p> <p>5.150 5.400 5.402</p>
<p><b>2 500-2 520</b> FIXED 5.409 5.410 5.411 MOBILE except aeronautical mobile 5.384A MOBILE-SATELLITE (space-to-Earth) 5.351A 5.403</p> <p>5.405 5.407 5.412 5.414</p>	<p><b>2 500-2 520</b> FIXED 5.409 5.411 FIXED-SATELLITE (space-to-Earth) 5.415 MOBILE except aeronautical mobile 5.384A <del>MOBILE SATELLITE (space-to-Earth) 5.351A 5.403</del></p> <p>5.404 5.407 5.414 5.415A</p>	<p><b>2 500-2 520</b> FIXED 5.409 5.411 FIXED-SATELLITE (space-to-Earth) 5.415 MOBILE except aeronautical mobile 5.384A MOBILE-SATELLITE (space-to-Earth) 5.351A 5.403</p> <p>5.404 5.407 5.414 5.415A</p>

**Reasons:** Co-frequency, co-coverage sharing between MSS and terrestrial Mobile services is not possible per ITU-R Report M.2041. As stated in M.2041, “When considering the sharing of the same frequency band between the terrestrial component of IMT-2000 and the MSS, the detailed analysis (see Annex 2) shows that such sharing is not feasible over the same geographical area. Consequently, Radiocommunication Study Group 8 came to the conclusion that co-frequency sharing is not feasible for networks operating in the same geographical area.”

Administrations in Region 2 have indicated no plans to implement MSS systems in the 2500-2690 MHz band. A number of Administrations in Region 2 have authorized terrestrial Mobile and Fixed services and several other Region 2 Administrations have definite plans to introduce new terrestrial Mobile and Fixed services in the 2500-2690 MHz band. (See WP-8F questionnaire to administrations and summary in document 8F/TEMP/276). Considering that:

- (1) Administrations in Region 2 have indicated no plans to implement MSS networks in the 2500-2690 MHz band,
- (2) Administrations in Region 2 have implemented or plan to implement terrestrial Mobile and Fixed services in the 2500-2690 MHz band,
- (3) Co-frequency sharing at 2500-2690 MHz between MSS and terrestrial services threatens to cause interference to terrestrial Mobile services systems.
- (4) That there is other spectrum allocated for MSS within Region 2

the MSS allocation in Region 2 is suppressed.

USA/ /2 MOD

## ARTICLE 5

**Frequency allocations**

## Section IV – Table of Frequency Allocations

**2 520-2 700 MHz**

<b>Allocation to services</b>		
<b>Region 1</b>	<b>Region 2</b>	<b>Region 3</b>
<b>2 520-2 655</b> FIXED 5.409 5.410 5.411 MOBILE except aeronautical mobile 5.384A BROADCASTING-SATELLITE 5.413 5.416      5.339 5.403 5.405 5.412 5.417C 5.417D 5.418B 5.418C	<b>2 520-2 655</b> FIXED 5.409 5.411 FIXED-SATELLITE (space-to-Earth) 5.415 MOBILE except aeronautical mobile 5.384A BROADCASTING-SATELLITE 5.413 5.416      5.339 5.403 5.417C 5.417D 5.418B 5.418C	<b>2 520-2 535</b> FIXED 5.409 5.411 FIXED-SATELLITE (space-to-Earth) 5.415 MOBILE except aeronautical mobile 5.384A BROADCASTING-SATELLITE 5.413 5.416 5.403 5.415A  <b>2 535-2 655</b> FIXED 5.409 5.411 MOBILE except aeronautical mobile 5.384A BROADCASTING-SATELLITE 5.413 5.416 5.339 5.417A 5.417B 5.417C 5.417D 5.418 5.418A 5.418B 5.418C

<b>2 655-2 670</b> FIXED 5.409 5.410 5.411 MOBILE except aeronautical mobile 5.384A BROADCASTING-SATELLITE 5.347A 5.413 5.416 Earth exploration-satellite (passive) Radio astronomy Space research (passive)  5.149 5.412 5.420	<b>2 655-2 670</b> FIXED 5.409 5.411 FIXED-SATELLITE (Earth-to-space) (space-to-Earth) 5.347A 5.415  MOBILE except aeronautical mobile 5.384A BROADCASTING-SATELLITE 5.347A 5.413 5.416 Earth exploration-satellite (passive) Radio astronomy Space research (passive)  5.149 5.420	<b>2 655-2 670</b> FIXED 5.409 5.411 FIXED-SATELLITE (Earth-to-space) 5.415 MOBILE except aeronautical mobile 5.384A BROADCASTING-SATELLITE 5.347A 5.413 5.416 Earth exploration-satellite (passive) Radio astronomy Space research (passive)  5.149 5.420
<b>2 670-2 690</b> FIXED 5.409 5.410 5.411 MOBILE except aeronautical mobile 5.384A MOBILE-SATELLITE (Earth-to-space) 5.351A Earth exploration-satellite (passive) Radio astronomy Space research (passive)  5.149 5.412 5.419 5.420	<b>2 670-2 690</b> FIXED 5.409 5.411 FIXED-SATELLITE (Earth-to-space) (space-to-Earth) 5.347A 5.415 MOBILE except aeronautical mobile 5.384A <del>MOBILE-SATELLITE (Earth-to-space) 5.351A</del> Earth exploration-satellite (passive) Radio astronomy Space research (passive)  5.149 5.419 5.420	<b>2 670-2 690</b> FIXED 5.409 5.411 FIXED-SATELLITE (Earth-to-space) 5.415 MOBILE except aeronautical mobile 5.384A MOBILE-SATELLITE (Earth-to-space) 5.351A Earth exploration-satellite (passive) Radio astronomy Space research (passive)  5.149 5.419 5.420 5.420A
<b>2 690-2 700</b> EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) 5.340 5.422		

**Reasons:** Co-frequency, co-coverage sharing between MSS and terrestrial Mobile services is not possible per ITU-R Report M.2041. As stated in M.2041, “When considering the sharing of the same frequency band between the terrestrial component of IMT-2000 and the MSS, the detailed analysis (see Annex 2) shows that such sharing is not feasible over the same geographical area. Consequently, Radiocommunication Study Group 8 came to the conclusion that co-frequency sharing is not feasible for networks operating in the same geographical area.”

Administrations in Region 2 have indicated no plans to implement MSS systems in the 2500-2690 MHz band. A number of Administrations in Region 2 have authorized terrestrial Mobile and Fixed services and several other Region 2 Administrations have definite plans to introduce new terrestrial Mobile and Fixed services in the 2500-2690 MHz band. (See WP-8F questionnaire to administrations and summary in document 8F/TEMP/276). Considering that:

- (1) Administrations in Region 2 have indicated no plans to implement MSS services in the 2500-2690 MHz band,
- (2) Administrations in Region 2 have implemented or plan to implement terrestrial Mobile and Fixed services in the 2500-2690 MHz band,

(3) Co-frequency sharing at 2500-2690 MHz between MSS and terrestrial services threatens to cause interference to terrestrial Mobile services,

(4) That there is other spectrum allocated for MSS within Region 2,

the MSS allocation in Region 2 is suppressed.

## ***United States of America***

### ***DRAFT PROPOSAL FOR THE WORK OF THE CONFERENCE***

**WRC-07 Agenda Item 1.9:** to review the technical, operational and regulatory provisions applicable to the use of the band 2 500-2 690 MHz by space services in order to facilitate sharing with current and future terrestrial services without placing undue constraint on the services to which the band is allocated;

**Background Information:** The band 2 500-2 690 MHz is allocated on a Primary basis to both terrestrial and satellite services. The terrestrial services include the Mobile Services and the Fixed Services (including IMT-2000). Both the terrestrial Mobile and Fixed Services have been rapidly evolving to encompass high-speed mobile Internet services requiring sensitive receiving equipment, which are highly susceptible to interference.

Portions of the 2500-2690 MHz band are also allocated to satellite services, which include MSS, BSS (including GSO and non-GSO), and FSS. The bands 2500-2520 MHz and 2670-2690 MHz are allocated to the MSS on a Primary basis and have been identified for use by the satellite component of IMT-2000 and beyond. As part of this identification, it was noted that, "in the long term" these bands might also be used for the terrestrial component of IMT-2000 and beyond (See Res.225).

At WRC-03 the issue of sharing between terrestrial services and NGSO BSS (Sound) in certain Region 3 countries was resolved with the revision of pfd limits for NGSO BSS (Sound) per Resolution 539. GSO BSS (Sound) limits within these countries were also tightened for systems for which complete Appendix 4 coordination information has been received after 1 June 2005. Other than for these Region 3 countries the BSS limits remained the same as given in Table 21-4.

In general, co-frequency sharing between the mobile-satellite service (MSS) and terrestrial services has been found to be difficult in the ITU-R studies. The sharing between the terrestrial services and the MSS poses risks of harmful interference to both systems. In addition, sharing would require large separation distances between terrestrial stations and MSS earth stations in order to avoid harmful interference to both Services.

Large separation distances could be available in large countries where citizens without the benefit of terrestrial infrastructure could rely on MSS systems to provide vital communications services including Internet access. The lack of terrestrial infrastructure in developing countries and sparsely populated areas also points up the need for Services such as the MSS.

ITU-R Report M.2041 studied the feasibility of sharing between MSS and MS for IMT-2000 and highlighted the sharing difficulties between these two services on a co-frequency, co-coverage

basis. Report M.2041, came to the conclusion that sharing is not feasible over the same geographical area. Consequently, Radiocommunication Study Group 8 came to the conclusion that co-frequency sharing is not feasible for networks operating in the same geographical area,” even though Report M.2041 was never vetted by ITU-R Working Party 8D.

Within Region 2, the 2005 hurricane season was marked by massive destruction that included terrestrial communications infrastructure. Entire regions in the states of Florida, Alabama, Mississippi, Louisiana and Texas were laid waste by hurricanes Katrina and Rita. MSS systems provided lifesaving communications for first responders and government agencies over wide spread areas where there were no terrestrial means. Had government officials availed themselves of MSS communications equipment before the storms and equipped their first responders continuity of emergency communications could have been maintained. Plans have been announced for first responders to be equipped with MSS equipment to provide alternative communications when terrestrial means fail. As much of Region 2 is prone to tropical storms, other countries may wish to follow the example of the USA and equip emergency personnel with MSS equipment.

In view of the outstanding performance provided by MSS systems during the past hurricane season, it seems foolhardy to advocate the complete elimination of an allocation for this Service in Region 2. Allocation to the MSS on a Secondary basis would provide a regulatory solution to interference while still maintaining the option of the MSS in areas where no terrestrial infrastructure exists.

**Proposal**

USA/ /1 MOD

ARTICLE 5

**Frequency allocations**

Section IV – Table of Frequency Allocations

**2 500-2 520 MHz**

Allocation to services		
<b>2 500-2 520</b>	<b>2 500-2 520</b>	<b>2 500-2 520</b>
FIXED 5.409 5.410 5.411	FIXED 5.409 5.411	FIXED 5.409 5.411
MOBILE except aeronautical mobile 5.384A	FIXED-SATELLITE (space-to-Earth) 5.415	FIXED-SATELLITE (space-to-Earth) 5.415
MOBILE-SATELLITE (space-to-Earth) 5.351A 5.403	MOBILE except aeronautical mobile 5.384A	MOBILE except aeronautical mobile 5.384A
	<del>MOBILE-SATELLITE</del>	MOBILE-SATELLITE (space-to-Earth) 5.351A 5.403
	<u>Mobile-Satellite</u> (space-to-Earth) 5.351A 5.403	
5.405 5.407 5.412 5.414	5.404 5.407 5.414 5.415A	5.404 5.407 5.414 5.415A

**Reasons:** In general, co-frequency sharing between the mobile-satellite service (MSS) and terrestrial services has been found to be difficult in the ITU-R studies. The sharing between the terrestrial services and the MSS poses risks of harmful interference to both systems. In addition, sharing would require large separation distances between terrestrial stations and MSS earth stations in order to avoid harmful interference to both Services.

Large separation distances could be available in large countries where citizens without the benefit of terrestrial infrastructure could rely on MSS systems to provide vital communications services including Internet access. The lack of terrestrial infrastructure in developing countries and sparsely populated areas also points up the need for Services like MSS. The use of large separation distances could permit the use of both terrestrial Services and the MSS.

Allocation to the MSS on a Secondary basis would provide a regulatory solution to interference while still maintaining the option of the MSS in areas where no terrestrial infrastructure exists.

USA/ /2 MOD

## ARTICLE 5

**Frequency allocations**

## Section IV – Table of Frequency Allocations

**2 520-2 700 MHz**

<b>Allocation to services</b>		
<b>Region 1</b>	<b>Region 2</b>	<b>Region 3</b>
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<p><b>2 670-2 690</b>                  FIXED 5.409 5.410 5.411                  MOBILE except aeronautical mobile 5.384A                  MOBILE-SATELLITE (Earth-to-space) 5.351A                  Earth exploration-satellite (passive)                  Radio astronomy                  Space research (passive)</p> <p>5.149 5.412 5.419 5.420</p>	<p><b>2 670-2 690</b>                  FIXED 5.409 5.411                  FIXED-SATELLITE (Earth-to-space) (space-to-Earth) 5.347A 5.415                  MOBILE except aeronautical mobile 5.384A  <del>MOBILE-SATELLITE</del>  <u>Mobile-Satellite</u> (Earth-to-space) 5.351A</p> <p>Earth exploration-satellite (passive)                  Radio astronomy                  Space research (passive)</p> <p>5.149 5.419 5.420</p>	<p><b>2 670-2 690</b>                  FIXED 5.409 5.411                  FIXED-SATELLITE (Earth-to-space) 5.415                  MOBILE except aeronautical mobile 5.384A                  MOBILE-SATELLITE (Earth-to-space) 5.351A                  Earth exploration-satellite (passive)                  Radio astronomy                  Space research (passive)</p> <p>5.149 5.419 5.420 5.420A</p>
<p><b>2 690-2 700</b>                  EARTH EXPLORATION-SATELLITE (passive)                  RADIO ASTRONOMY                  SPACE RESEARCH (passive)                  5.340 5.422</p>		

**Reasons:** In general, co-frequency sharing between the mobile-satellite service (MSS) and terrestrial services has been found to be difficult in the ITU-R studies. The sharing between the terrestrial services and the MSS poses risks of harmful interference to both systems. In addition, sharing would require large separation distances between terrestrial stations and MSS earth stations in order to avoid harmful interference to both Services.

Large separation distances could be available in large countries where citizens without the benefit of terrestrial infrastructure could rely on MSS systems to provide vital communications services including Internet access. The lack of terrestrial infrastructure in developing countries and sparsely populated areas also points up the need for Services like MSS. The use of large separation distances could permit the use of both terrestrial Services and the MSS.

Allocation to the MSS on a Secondary basis would provide a regulatory solution to interference while still maintaining the option of the MSS in areas where no terrestrial infrastructure exists.